



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,314	02/26/2002	Fumio Isshiki	ASAM.0053	2802

38327 7590 09/20/2005

REED SMITH LLP  
3110 FAIRVIEW PARK DRIVE, SUITE 1400  
FALLS CHURCH, VA 22042

EXAMINER

GIESY, ADAM

ART UNIT PAPER NUMBER

2651

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/082,314

Applicant(s)

ISSHIKI, FUMIO

Examiner

Adam R. Giesy

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11, 14-18 is/are rejected.
- 7) ☒ Claim(s) 9, 10, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claim 4 is objected to because of the following informalities:

Claim 4 should read "...characterized by a semiconductor laser..." instead of "...semi-conductor laser..." in order to maintain consistency.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4, 5, 7, 14, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1).

Regarding claim 1, Yoshida discloses optical head (Figure 3) characterized by a light source formed of an indirect semiconductor laser (element 301 – see also page 4, paragraphs 0040-0042), a lens (element 302) for focusing a light beam from the light source onto a medium (309), and a detector (311) for detecting a reflected light beam from the medium.

Art Unit: 2651

Regarding claim 2, Yoshida discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the semiconductor laser has an active layer for emitting a light beam (Figure 2, element 205), and an indirect semiconductor is used for the active layer (see page 4, paragraphs 0040 and 041).

Regarding claim 4, Yoshida discloses an optical head (Figure 3) characterized by a semiconductor laser having an active layer made of an indirect semiconductor mixed crystal material (element 301 – see also page 4, paragraphs 0040-0042), and a detector for detecting a reflected light beam from a medium (311).

Regarding claim 5, Yoshida discloses an optical head (Figure 3) characterized by a recording laser (301), and a reproducing laser (304) provided independent from the recording laser, the reproducing laser being an indirect semiconductor laser (see also page 4, paragraphs 0040-0042).

Regarding claim 7, Yoshida discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the indirect semiconductor has an active layer structure (Figure 2, element 205), and has an adjacent confinement structure (see page 4, paragraph 0040).

Regarding claim 14, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above and further that a d.c. drive is used for driving the semiconductor laser (see page 4, paragraph 0047).

Regarding claim 18, Yoshida discloses an optical disc apparatus using an optical head as set forth in claim 4 (see page 3, paragraph 0024).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1) in view of Valster et al. (hereinafter Valster – US Pat. No. 5,296,717).

Regarding claim 3, Yoshida discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above. Yoshida fails to disclose a quantum well structure with barrier layers.

Valster discloses a light emitting semiconductor device that has a quantum well structure for emitting a light beam (column 6, lines 25-27), the quantum well structure comprises an active layer and a barrier layer (column 6, lines 21-27 – see especially “Separate Confinement Layers” in lines 24 and 25), and an indirect semiconductor material is interposed between the active layer and the barrier layer (see column 2, lines 15-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head structure as disclosed by Yoshida with the layering structure and quantum wells as disclosed by Valster, the motivation being to produce a more intense and direct laser beam.

Art Unit: 2651

Regarding claim 6, Yoshida discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above. Yoshida further discloses that the indirect semiconductor has an active layer structure (element 301 – see also page 4, paragraphs 0040-0042). Yoshida fails to disclose a quantum well structure.

Valster discloses a light emitting semiconductor device that has an indirect semiconductor (see column 2, lines 15-16) that has an active layer (column 6, lines 25-27), and has a quantum well structure (column 6, lines 25-27)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head structure as disclosed by Yoshida with the quantum wells as disclosed by Valster, the motivation being to produce a more intense and direct laser beam.

Regarding claim 8, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above. Yoshida fails to disclose that the material of the indirect semiconductor is of an AlGaP (aluminum gallium and phosphor) group.

Valster discloses an indirect semiconductor structure in which the layers are composed of InAlGaP (see column 6, lines 25-27 - read to be in the AlGaP group).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head structure as disclosed by Yoshida with the layering structure as disclosed by Valster, the motivation being to produce a more intense and direct laser beam.

Art Unit: 2651

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1) in view of Chapple-Sokol et al. (hereinafter Chapple – US Pat. No. 5,354,707).

Regarding claim 11, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above. Yoshida fails to disclose that the material of the indirect semiconductor is of a SiGe (silicon germanium) group.

Chapple discloses an indirect semiconductor structure in which the layers are made from the SiGe group (see column 3, lines 11-38 - read to be in the SiGe group).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head structure as disclosed by Yoshida with the layering structure as disclosed by Chapple, the motivation being to produce a more intense and direct laser beam.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1) in view of Hayashi (US Pat. No. 6,394,655 B1).

Regarding claim 15, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above. Yoshida fails to disclose an indirect laser incorporating a multi-layer film at an end face of a resonator and serving as a light source.

Hayashi discloses that a reflective film is formed at one end face of a resonator in his semiconductor laser (see abstract).

Art Unit: 2651

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head as disclosed by Yoshida with the film and resonator as disclosed by Hayashi, the motivation being to produce a laser with improved transmission speed.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1) in view of Momoo et al. (hereinafter Momoo - US Pat. No. 6,741,538 B2).

Regarding claim 16, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above and further that the semiconductor laser is made of an indirect semiconductor and serves as a light source (element 301 – see also page 4, paragraphs 0040-0042). Yoshida fails to disclose a waveband pass filter for limiting the wavelength of a light beam from the semiconductor laser.

Momoo discloses a semiconductor laser system that uses a band-pass filter, in order to limit the reflection and transmission of the light by the wavelength (see column 1, lines 46-48 – this filter can be set to any wavelength for the best mode of operation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head and semiconductor laser as disclosed by Yoshida with the band-pass filter as disclosed by Momoo, the motivation being in order to limit the reflection and transmission of the light by the wavelength.



Art Unit: 2651

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida et al. (hereinafter Yoshida – US Doc. No. 2002/0024153 A1) in view of Brown (US Pat. No. 5,625,729).

Regarding claim 17, Yoshida discloses all of the limitations of claim 4 as discussed in the claim 4 rejection above and further that the semiconductor laser is made of an indirect semiconductor and serves as a light source (element 301 – see also page 4, paragraphs 0040-0042). Yoshida fails to disclose a cooler for lowering the laser temperature.

Brown discloses a semiconductor laser with heat sinks or active coolers for lowering the temperature of the light emitting part of the laser during operation (see column 14, lines 20-34).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the optical head and laser as disclosed by Yoshida with the cooler as disclosed by Brown in order to effectively avoid overheating the light emitting part of the laser.

***Allowable Subject Matter***

10. Claims 9, 10, 12, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

See reasons for indicating allowable subject matter in the previous office action, mailed 4/4/2005.

Art Unit: 2651

**Conclusion**

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Valster et al. (US Pat. No. 5,358,897) discloses an indirect semiconductor laser with quantum wells.
- b. Mascarenhas (US Pat. NO. 6,815,736 B2) discloses a light emitting device that contain quantum wells and uses materials from the AlGaP group.
- c. Yagi (US Pat. No. 6,828,594 B2) discloses a semiconductor laser and optical head.
- d. Edmond et al. (US Pat. No. 6,906,352 B2) discloses an indirect semiconductor laser with quantum wells.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam R. Giesy whose telephone number is (571) 272-7555. The examiner can normally be reached on 8:00am- 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ARG 9/12/05

*ARG*

  
DAVID HUDSPETH  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600